Patent claims

1. A linear drive, in particular a rack and pinion drive, with at least one motor element (2) mounted on or in a retaining element (1.1, 1.2), the motor element (2) driving a pinion (4) directly or indirectly, optionally via an integrated drive (3), said pinion interacting with a linear guide (5),

characterized in that

the retaining element (1.1, 1.2) can be moved in relation to a receiving element (6) by at least one actuator (12.1 to 12.3)

2. A linear drive, in particular a rack and pinion drive, with at least one motor element (2) mounted on or in a retaining element (1.1, 1.2), the motor element (2) driving a pinion (4) directly or indirectly, optionally via an integrated drive (3), said pinion interacting with a linear guide (5), characterized in that in order to guarantee permanent freedom from backlash and/or permanent two-flank contact between pinion (4) and linear guide (5), the retaining element (1.1, 1.2) can be controlled, moved or preloaded under active control during operation in response to a measurement of force in horizontal and/or vertical

direction of the pinion (4) via at least once actuator (12.1 to 12.3) in relation to a receiving element (6).

3. The linear drive as claimed in claim 1 or 2, characterized in that the retaining element (1.1, 1.2) is coupled to the receiving element (6) by at least one guide element (11) and can move back and forth in linear direction in relation to the receiving element (6).

4. The linear drive as claimed in claim 3, characterized in that the guide element (11) is designed as a leaf spring element (10) , linear guide, needle roller bearing, etc.

5. The linear guide as claimed in at least one of claims 1 to 4, characterized in that the retaining element (1.1, 1.2) is slightly distant from the receiving element (6) and arranged parallel hereto.

6. The linear drive as claimed in claim 4 or 5, characterized in that in each of the sides areas in the area of one upper side (8) and in the area of one lower side (9) of retaining element (1.1) and receiving element (6), receiving element (6) and retaining element (1) are each linked to one another in the flange areas by leaf spring elements (10).

7. The linear drive as claimed in at least one of claims 1 to 6, characterized in that in one or both side areas of the receiving element (6) a connecting piece (13) engages at least partly in a recess (15) of the retaining element (1.1) 5 and that the at least one actuator (12.1, 12.2) is employed between a flange of the retaining element (1.1) and the connecting piece (13).

8. The linear drive as claimed in at least one of claims 1 to 7, characterized in that the actuator (12.1, 12.2) is designed as a piezo actuator or shape memory actuator, or as an electrically, mechanically or hydraulically operated actuator.

9. The linear drive as claimed in at least one of claims 4 to 8, characterized in that at least one force and/or position sensor (16) is assigned to the at least one guide element (11)

10. The linear drive as claimed in at least one of claims 1 to 9, characterized in that at least one force and/or position sensor (16) is assigned to the actuator (12.1 to 12.3).

11. The linear drive as claimed in at least one of claims 7 to 10, characterized in that at least one force and/or

position sensor (16) is assigned to the connecting piece (13), in particular in the area of the mounting of the actuator (12.1, 12.2).

12. The linear drive as claimed in at least one of claims 1 to 11, characterized in that at least one force and/or position sensor (16) is assigned to the motor element (2) and/or integrated drive (3).

13. The linear drive as claimed in at least one of claims 1 to 6, characterized in that an actuator (12.3) in the form of a spindle drive (17) for linear movement of a wedge (18) is mounted on the retaining element (1.2) in the area of one upper side (8).

14. The linear drive as claimed in claim 13, characterized in that a flange (19) is assigned to the receiving element (6) that interacts with the wedge (18) of the spindle drive (17) of the retaining element (1.2).

15. A process for the operation of a linear drive (R_1, R_2) , in particular a rack and pinion drive, with a motor element (2) mounted on or in a retaining element (1.1, 1.2) the motor element(2) driving a pinion (4), optionally via an integrated drive(3), said pinion interacting with a linear guide (5),

characterized in that

by measuring the force of pinion (4) in relation to the linear guide (5) in horizontal and/or vertical direction, a preload force of the pinion (4) in relation to the linear guide (5) is determined and/or set in order to guarantee a permanent freedom from backlash and/or a permanent two-flank contact between pinion (4) and linear guide (5).

16. The process as claimed in claim 15, characterized in that during operation with changing accelerations and/or speeds and/or loads and/or dead weights a preload force between pinion (4) and linear guide (5) can be determined and/or changed and/or controlled by permanent force measurement in horizontal and/or vertical direction for the control of the actuators (12.1, 12.2).

17. The process as claimed in claim 15 or 16, characterized in that the preload force between pinion (4) and linear guide (5) is controlled depending on the acceleration during operation in order to guarantee a permanent freedom from backlash and/or a permanent two-flank contact between pinion (4) and linear guide (5).

18. The process as claimed in at least one of claims 15 to 17, characterized in that via the guide elements (11), in

particular the leaf spring elements (10) a preload force is permanently set via the at least one actuator (12.1 to 12.3) and that the preload force is permanently changed and/or adapted during operation to changing accelerations and/or loads and/or speeds.